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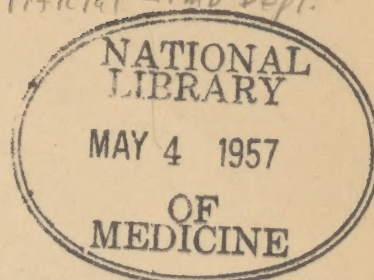
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DOCUMENTS SECTION

U.S. Naval Hospital
Mare Island, California. Artificial Limb Dept.
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Committee on Artificial Limbs
National Research Council
2101 Constitution Avenue
Washington 25, D. C.



MONTHLY REPORT OF THE EXPERIMENTAL WORK AT THE ARTIFICIAL LIMB SHOP
MARE ISLAND NAVAL HOSPITAL

During the month of October the appropriation of \$25,000 was received from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., to be used for experimental and developmental purposes. At the present time we are in the process of hiring additional employees in order to carry on this work.

The following projects are being worked upon:

1. FUNCTIONAL ANKLE JOINTS: Fifteen additional joints have been installed on amputees for field testing. Observation and the reactions of the amputees using this ankle joint continues to be very favorable, many of the amputees state they would not be without this type of ankle joint in the future. We are redesigning the joint to eliminate the wooden ankle block and shin block and intend to make a die cast aluminum part which will be incorporated directly in the plastic. This will lighten and further strengthen the jointed parts between the shin and the ankle. A model of this part is being fabricated by hand which, if successful, it is intended to have dies built so the part can be cast.
2. DIES FOR COSMETIC COVERING FOR THE LOWER LEG: The die for the cosmetic stocking for the lower leg has been completed and we intend to make a number of stockings of Poly-vinyl-chloride for a cosmetic covering for the lower leg and ankle.
3. SUCTION SOCKETS:
 - (a) Above Knee: Six more suction sockets have been fitted for field testing on A. K. amputees. Reports and observations of amputees wearing suction sockets continue to be favorable. We are continuing to fit cases which have complicated stumps with suction sockets in order to evaluate and determine the limitations in patients that can be successfully fitted with suction sockets.
 - (b) Below Knee: We are continuing to fit B.K. stumps with suction sockets

which are fabricated in conjunction with the soft bucket. The horsehide lining is not a suitable material because perspiration dampens the leather which in turn causes excoriation of the skin and the stump. We are endeavoring to coat the rubber with cellulose acetate as a substitute for the horsehide and we are also working on a flexible type of poly-styrene plastic for this purpose.

- (c) Below Elbow: Below elbow suction sockets for a bilateral amputee are being manufactured. One stump is fairly long and the other is a wrist disarticulation.
- (d) Above-Elbow: A suction socket has been installed on an above elbow amputee in conjunction with the Fitch arm with a pronator supinator.

4. CINEPLASTIC: Three additional cases have been fitted up with forearm cineplastic motors similarly to Mr. Strong. These cases are all using Robinson hands which are powered from the opposite shoulder. The two German amputees are utilizing their Fitch cineplastic prosthesis. A flexor and extensor wrist unit has been received from Northrop Corporation and has been installed on Hans' right prosthesis. This is an improvement over the one developed at Mare Island but there is no cable extensor available which is necessary in order to open the hook completely with the wrist in the flexed position.

5. PRONATOR IN SUPINATOR FOR ABOVE ELBOW: The latest design in the pronator and supinator is being installed and is an improvement over the type that the German amputees are wearing. This model rotates 210 degrees with a one inch travel. Ball bearings are installed in the face of the wrist plate which allows the part to operate with less friction.

6. ROBINSON HAND AND COSMETIC GLOVE: Additional amputees are being fitted with the Robinson hand for further field testing and we are installing locks in the older models that are being used by amputees. A mechanism has been mailed to Dr. Clark, University of Maryland, for a foam filling and a light cosmetic glove. Further work is continuing on production methods of manufacturing a seamless glove in order to cut down the steps and man hours necessary to produce the casts.

7. SOFT BUCKETS AND IMPRESSION METHODS FOR BELOW KNEE STUMPS: At the present time we are fitting all our B.K. amputees with soft buckets which are made from casts taken by the impression method. Observations are being recorded on patients who are undergoing field testing with the soft bucket. Soft buckets are also being manufactured for above and below elbow prosthesis.

8. "SELECTRON" WITH "FORTISAN" LAMINATE: Further field testing is continuing with the plastic in shins and arms, and at the present time we are using this combination exclusively.

9. PRODUCTION METHODS FOR LIMB MANUFACTURING: We are endeavoring to set up production methods to enable us to manufacture and finish an artificial limb

in the shortest time possible in order that amputees can be provided with a prosthesis with the minimum of time; from taking his measurements and casts to the completed prosthesis.

10. TILTING-TABLE PROSTHESIS: We are in the process of designing a new type of tilting-table and are endeavoring to incorporate a functional hip joint on a suction socket.

11. A NEW TYPE JOINT FOR ELBOW, WRISTS, KNEES AND HIPS: A new type of functional joint has been designed which allows motion in all directions which we believe will be applicable to various joints.

12. ABOVE KNEE: The A.K. joint is now entirely from a forged 75 s.t. and incorporates a simplified Mare Island, brake. This joint is being used routinely and further field testing is being made on cases fitted.

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